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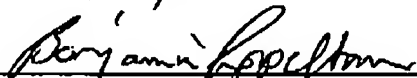
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Serial No.: 10/669,357
Applicant: HASSAN, AZIZ et al.
Atty. Docket No.: BSN5DIV
Filed: 25 Sept. 2003
Examiner: Erma C. Cameron
Group Art Unit: 1762
For: REPULPABLE WAX

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**RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF:
TRANSMITTAL OF AMENDED APPEAL BRIEF**

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
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IDENTIFICATION PAGE

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For: REPULPABLE WAX

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AMENDED APPEAL BRIEF

This is an appeal from the final rejection of the Examiner mailed August 3, 2006 rejecting Claims 30-39, 41, 42, 45 and 47. The fee for filing this brief has been previously paid when the original appeal brief was filed in February 2007.

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1. **REAL PARTY IN INTEREST**

The real party in Interest is HRD Corp, Houston, TX, the assignee of this patent application.

2. **RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to the appellant or the appellant's legal representative, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. **STATUS OF CLAIMS**

There are forty-seven (47) Claims in the application.

Claims 30 and 45 are the Independent Claims.

The status of the Claims as set out in Office Paper No. 20060801 (Office Action mailed 3 August 2006) is as follows:

Claims allowed: None.

Claims objected to: None.

Claims rejected: Claims 30-39, 41-43, 45 and 47.

Claims cancelled: Claims 1-29, inclusive; 40, 43, 44, and 46.

The Claims on Appeal are: Claims 30-39, 41-42, 45 and 47.

The Office Paper dated 20060801 states that claim 43 was rejected; however, claim 43 had been cancelled in the amendment filed 15 May 2006.

4. **STATUS OF AMENDMENTS**

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The application was filed on 25 September 2003. There are forty-seven (47) Claims, of which two (2) are independent Claims (Claims 30 and 45).

A final rejection was issued in Office Paper 20060801 (mailed 3 August 2006). A Notice of Appeal was filed on 4 December 2006; no response was filed in response to the final rejection.

Based on the final rejection, the status of the claims is:

Claims allowed:	None.
Claims objected to:	None.
Claims rejected:	Claims 30-39, 41-43, 45 and 47.
Claims cancelled:	Claims 1-29, inclusive; 40, 43, 44, and 46.

The Claims on Appeal are: Claims 30-39, 41-42, 45 and 47.

The Office Paper dated 20060801 states that claim 43 was rejected; however, claim 43 had been cancelled in the amendment filed 15 May 2006.

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5. SUMMARY OF CLAIMED SUBJECT MATTER

Two (2) independent Claims are involved in this appeal, Claims 30 and 45. Pursuant to 37 CFR 41.37(c)(1)(v), all references to the specification refer to the substitute specification filed 6 December 2004.

As described in the specification, embodiments of the invention include a composition that can be applied to fibrous cellulosic materials, such as paper, cardboard, fiberboard and the like, and render the treated product both water-resistant and capable of being recycled (p. 3, lines 1-4; p.7, lines 8-19; p. 8, lines 11-16, and lines 26-28 regarding use of the terms "repulping", "recycling", "repulpability" and "recyclability"; Example 1, p. 16, line 28 - p. 18, line 5; Example 2, and particularly at p. 19, line 17- p. 20, line 17). Rendering the fibrous cellulosic material water resistant prevents damage to the treated fibrous cellulosic material caused by leakage of frozen goods, or goods packed in wet ice, and shipped in such materials (p. 6, lines 12-14; Example 1, p. 16, line 26-p. 17, line 19, particularly at p. 18, lines 12-19, including Table 3; p. 18, line 26-p. 19, line 15, including Table 4). By being removable, the coating allows such treated fibrous cellulosic materials to be recycled, a task that had been difficult to achieve when using fibrous cellulosic materials coated with petroleum-based coatings, such as paraffin waxes (p. 3, lines 1-18; p. 4, lines 18-25). For purposes of recycling, the treated fibrous cellulosic products are immersed in a bath of warm water, and which generally has an alkaline pH (p.3, lines 1-6, lines 13-18; p. 16, lines 15-23; p. 19, lines 17-26). After a period of immersion in this bath, the coating is removed from the treated fibrous cellulosic material, and the fibrous cellulosic material can be reused for recycled paper, rather than having to be discarded (p. 19, line 17- p. 20, line 17). The use of a vegetable-derived wax has a useful environmental impact in that the product is renewable, and also reduces industrial dependence on petroleum, whose supply is subject to interruption, cost increases, and eventual depletion (p. p. 4, line 27- p. 5, line 6; p. 6, lines 22-24; p. 7, lines 1-2; p. 9, lines 26-29).

Claim 30

Claim 30 describes a composition that is derived from hydrogenated vegetable oils, which, when applied to a fibrous cellulosic material, will render that material resistant to water. An additional property of that composition is that when the material is placed into a warm alkaline aqueous solution, for example water, the applied composition is dispersible in that solution. In other words, the claim describes a vegetable derived triglyceride that can render a paper product water resistant, and when the coated paper product is immersed in warm alkaline water, the

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coating can be removed from the paper, enabling the coating and the paper to be recycled.

The triglyceride can be obtained from vegetables such as soybean, corn, cottonseed, rape, canola, sunflower, palm, palm kernel, coconut, crambe, linseed and peanuts (p. 7, lines 21-22; p. 9, lines 26-28; p.11, lines 2-8).

The soybean triglyceride is characterized by having a melting point that is greater than 120 degrees F (Mettler Drop Point of 155-160 degrees F, Table 1, page 14, p. 15, lines 3-4), and an iodine value that is between 0 and 30 (I.V. by R.I. of 2.0 max, Table 1, page 14). The iodine value is a parameter that indicates the degree of hydrogenation of the triglyceride (page 10, lines 20-24).

The palm triglyceride is characterized by having a melting point that is greater than 120 degrees F (Mettler Drop Point of 136-142 degrees F, Table 2, page 15; p. 15, lines 3-4), and an iodine value that is between 0 and 30 (Iodine Value by R.I. of 5.0 max, Table 2, page 15). The properties of the soybean and palm triglycerides are summarized in Tables 1 and 2 (pages 14 and 15, respectively). Note that the fatty acid composition of the two waxes varies (fatty acid concentration determined by gas-liquid chromatography analysis), and for the convenience of the Board the fatty acid composition is summarized below in Table A:

Table A. Comparison of Inventive Wax Compositions

WAX		
Fatty Acid	Soybean ^a	Palm ^b
C8:0 (%)		0.3 max*
C10:0		0.3 max
C12:0		0.5 max
C14:0	3.0 max	1.1 max
C16:0	3-14	39.5 min**
C18:0	82-94	53 min
C18:1		1.0 max
C18:2		0.5 max
C20:0	5 max	

a. Soybean data from Table 1, page 14, last 5 lines of Table 1; p. 14, lines 6-8, and p. 16, lines 8-13.

b. Palm data from Table 2, page 15, last 9 lines of Table 2, and p. 16, lines 8-13.

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* max=maximum quantity

**min=minimum quantity

5 The point of this comparison is to indicate that while each wax may comprise almost 98% by weight triglyceride (p. 15, line 9- p. 16, line 13) this triglyceride is still a mixture of fatty acids, although one type of fatty acid may be the majority or predominant one in the triglyceride. The triglyceride does not contain 100% by weight of any one particular fatty acid. (see p. 16, lines 4-6, and lines 8-13).

10 Example 1 (p. 16, line 28- p. 18, line 5) illustrates the application of each of the soybean and palm waxes to a fibrous cellulosic material, rendering it resistant to water.

15 Table 3 (p. 17, lines 12-14), and the Repulping Tests (p. 19, line 17- p. 20, line 17) illustrate the applied composition being dispersible in a warm alkaline solution (recyclability and/or repulping).

Claim 30 is recited below:

20 30. A composition for application to a fibrous cellulosic material, the composition comprising a vegetable-derived triglyceride having a melting point greater than 120 degrees F, and being characterized by an iodine value between 0 and 30, the triglyceride comprising an oil selected from the group consisting of soybean, corn, cottonseed, rape, canola, sunflower, palm, palm kernel, coconut, crambe, linseed and peanut, the composition applied in a quantity sufficient to render the cellulosic material resistant to water, the applied composition being dispersible in a warm alkaline aqueous solution.

25 Claim 45

30 Independent Claim 45 describes a composition which, when applied to a fibrous cellulosic material, will render that material resistant to water. Claim 45 is a narrower claim than Claim 30; Claim 45 claims a range of melting points for the waxes, and an iodine value of between 2 and 5 for the waxes. An additional property of that composition is that when the material is placed into a warm alkaline aqueous solution, for example water, the applied composition is dispersible in that solution. In other words, the claim describes a vegetable derived triglyceride that can render a paper product water resistant, and when the coated paper product is immersed in
35 warm alkaline water, the coating can be removed from the paper, enabling the coating and the

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paper to be recycled.

The triglyceride in this claim can be obtained from vegetables such as soybean and palm, and the other vegetables described for the waxes in the section above relating to claim 30 (p. 7, lines 21-22; p. 9, lines 26-28; p. 11, lines 2-8).

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The triglyceride is characterized by having a melting point that ranges from 136 degrees F to 160 degrees F; the palm and soybean triglycerides having a melting point, by Mettler Drop Point, of 136-142 degrees, and 155-160 degrees F, Tables 2 and 1, pages 15 and 14, respectively. The palm and soybean triglycerides have an iodine value that is between 2 and 5; the iodine values being 5.0 max and 2.0 max, Tables 2 and 1, pages 15 and 14, respectively. The triglyceride comprises stearic acid (but see Tables 1 and 2, because this may be a majority fatty acid in the triglyceride, as discussed above). The composition is also characterized by having a viscosity ranging from about 10 cps to about 200 cps (when measured at 140 degrees F, p. 15, lines 6-7). The properties of the soybean triglyceride and the palm triglyceride are summarized in Tables 1 and 2 (pages 14 and 15), respectively.

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Example 1 (p. 16, line 28- p. 18, line 5) illustrates the application of each of the soybean and palm waxes to a fibrous cellulosic material, rendering it resistant to water.

20

Table 3 (p. 17, lines 12-14), and the Repulping Tests (p. 19, line 17- p. 20, line 17) illustrate the applied composition being dispersible in a warm alkaline solution (recyclability and/or repulping).

Claim 45 is recited below.

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45. A composition for application to a fibrous cellulosic material, the composition comprising a vegetable-derived triglyceride having a melting point between 136-160 degrees F, the triglyceride being characterized by having an iodine value of between 2 and 5, the composition being characterized by a viscosity of from about 10 to about 200 cps at 140 degrees F, wherein the triglyceride comprises a fatty acid, the fatty acid being stearic acid, and wherein the triglyceride comprises an oil selected from the group consisting of palm and soybean oil, the composition applied in a quantity to render the cellulosic material resistant to water, the applied composition being dispersible in a warm alkaline aqueous solution.

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6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 30-39, 41-42, 45 and 47 stand rejected under 35 U.S.C. 103(a) as being unpatentable.

5 The rejections of these Claims could be grouped as follows:

Whether Claims 30-39, 41-42, 45 and 47 are unpatentable under 35 U.S.C. §103(a), as being obvious based on Sleeter (U.S. Pat. No. 6,011,286).

10 Whether Claims 30-38, 41-42, 45 and 47 are unpatentable under 35 U.S.C. §103(a), as being obvious based on WO96/00815.

Whether Claims 30-33, 41 and 47 are unpatentable under 35 U.S.C. §103(a), as being obvious based on RD 392017.

15 In the Argument section, the references will be referred to as follows:

- the Sleeter patent (U.S. Pat. No. 6,001,286, "the '286 reference") ,
- WO96/00815 ("the '815 reference"), and
- an Abstract obtained through Derwent, RD 392017 ("the '017 reference").

20 In Applicants' May 2006 reply to an Office Action, a copy of the entire '017 reference was obtained and made part of the record in an Information Disclosure Statement; a copy of the '017 reference is included in the Evidence Appendix

7. ARGUMENT**Rejection of Claims under 35 U.S.C. § 103**

For purposes of this Appeal Brief, there will be separate sub-arguments for the patentability of Independent Claim 30 and Independent Claim 45. Several dependent claims will be argued separately; otherwise the patentability of the dependent claims will depend upon the outcome of the argument for their respective Independent claim.

I. Whether Claims 30-39, 41-42, 45 and 47 are unpatentable under 35 U.S.C. §103(a), as being obvious based on Sleeter (U.S. Pat. No. 6,011,286).

A. Claims 30-39, 42 and 47

1) Obviousness; Inherency

Claims 30-39, 42 and 47 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sleeter U.S. Pat. No. 6,011,286 ("the '286 reference").

Applicant had traversed these rejections, and maintains that the rejection of Claim 30 and this group of related claims is improper. To reject a claimed invention based upon its obviousness over the prior art, the examiner must support such a rejection by establishing the invention's prima facie obviousness. The examiner must show where in the art cited there is a description of the claimed invention sufficient to have taught or suggested the invention to ordinarily skilled artisans of the time (see, e.g., ACS Hospital Systems, Inc., v. Montefiore Hospital, 221 U.S.P.Q. 929, 933 (F. Cir. 1984); see also, In re Fine, 5 U.S.P.Q.2d 1696 (F. Cir. 1988)).

Evaluation of whether the cited documents provide the necessary description requires consideration of "(1) whether the prior art would have suggested to those of ordinary skill in the art they should make the claimed [invention] ... and (2) whether the prior art would have also revealed that in so making ... those of ordinary skill would have a reasonable expectation of success" (In re Vaack, 20 U.S.P.Q.2d 1438, 1442 (F. Cir. 1991)). "Both the suggestion and the reasonable expectation of success must be found in the prior art, not in the applicant's disclosure" (In re Vaack, supra). That is, "one cannot use hindsight reconstruction to pick and choose amongst isolated disclosures in the prior art to deprecate the claimed invention" (In re Fine, supra at 1600).

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Each claim limitation must be taught, either explicitly or implicitly by the teachings of the reference. Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. and Inter. 1985). "The examiner must make a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. and Inter. 1985).

Regarding the nature of an obviousness question, in In re Kotzab, 55 USPQ2d, 1313, 1317 (Fed. Cir. 2000) stated

The motivation, teaching or suggestion may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. See Dembiczak, 175 F.3d at 999, 50 USPQ 2d at 1617. The motivation, teaching or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. See WMS Gaming Inc. v. International Game Tech., 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999). The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA, 1981) (and cases cited therein).

The '286 reference allegedly teaches enhancing water resistance of materials such as fiberboard (1:54-67) with a composition of low iodine value (preferably 0-30, col. 1:40-52) triglyceride fats from plant or animal sources (col. 2:21-46), such as a soy stearine (Example 1).

The '286 reference does not disclose the MP or saponification value of the triglyceride, but because stearine is one of the triglycerides claimed by applicant, the stearine of '286 is alleged to have, inherently, the same MP and saponification value as that claimed by applicant. The '286 reference does not disclose the viscosity of the waxes used in its examples.

These allegations that the claimed properties are inherent in the reference are based merely on hindsight, because the teaching of applicants' claimed invention, and not that of the reference, is being used to teach what was not taught or recognized by the reference. The '286 reference does not discuss properties such as the melt point, saponification number or viscosity of the materials, as the examiner explicitly stated in the Office Action.

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The Court of Claims and Patent Appeals ("the C.C.P.A.") and its' successor court, the Federal Circuit, have both held that such use of an applicant's application to complete gaps in the reference is improper. See In re Shetty, 195 USPQ 753, 756-57 (C.C.P.A. 1957) (that which is inherent in the prior art, if not known at the time of the invention, cannot form a proper basis for rejecting the claimed invention as obvious under 35 U.S.C., §103(a))

In In re Spormann, 150 USPQ 449, 452 (C.C.P.A. 1966) the court stated:

[T]he inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known, Obviousness cannot be predicated on what is unknown.

The Federal Circuit stated that "Inherency is quite immaterial if ... one of ordinary skill in the art would not appreciate or recognize the inherent result" in In re Rijckaert, 28 USPQ2d 1955, 1957 (F.Cir. 1993).

The melt point, saponification number and viscosity are unknown in the '286 reference. Tables 1 and 2 of the present pending specification (p. 14-15, respectively) summarize properties of the inventive waxes, and the fatty acid composition of these waxes ranges from C₈ through C₂₀. The soy wax has a greater concentration range of C_{18:0} (stearic acid) than the palm wax.

Therefore, because the reference failed to appreciate or recognize the properties Applicant claims in the present pending claims, under the case law it is impermissible to have employed the Applicants' teaching and recognition of the properties of the inventive waxes to fill in the gaps of the reference. Accordingly, the rejection of Claims 30-39, and 42 under 35 U.S.C. §103(a) are improper, and the Board must therefore reverse these rejections and find that these claims define patentable subject matter.

B. Claim 30: Recycling

At issue is whether Claim 30 requires recycling; the examiner alleges the claim only requires that the composition applied be dispersible in warm alkaline aqueous solution. Applicant submits that one skilled in the art would realize, from reading both the claims and the specification, that a coating being dispersible in a warm alkaline aqueous solution is recycling. For example, see the specification at page 16, lines 15-23; p. 17, lines 7-10 and 16-18, and p. 19, line 17 through p. 20, line 17, where Applicants refer to recycling, repulping and the use of warm alkaline aqueous mixtures to remove a coating for recycling.

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Applicants reiterate the statements and case law previously cited regarding inherency, melting point and other parameters. It is the Applicants' teaching being used in hindsight to fill the gap of the reference, because the reference fails to recognize the recyclability of their composition. The '286 reference deals with rendering structural products water resistant; it does not recognize, nor even attempt to determine, whether the applied composition is dispersible under aqueous conditions. Therefore, the rejections of Claim 30 under 35 U.S.C. §103(a) is improper and must be reversed by the Board.

C. Claim 47 and Material Types

At issue is whether the '286 reference teaches application of its' composition to a group of materials that is broader than oriented strand board and related structural materials, such as to fibrous vegetable materials (alleged to be inclusive of paper) and fiber board.

Applicants maintain that the '286 reference is in fact so limited. The title of the '286 reference refers to "composite boards". The specification focuses on using the material for composites such as

"particle board, plywood, oriented strand board ("OSB"), medium density fiberboard, hardboard, formed molded shapes, etc.. Adhesives and laminants alone or synergistically blended together are used to bond these materials into desired forms such as panels, structural shapes, etc." (col. 1, lines 56-61).

The examiner is correct in her assertion that, in general, a restriction requirement would not be a proper place for a detailed study of the potential uses of the composition, the fact that the patentee's attorneys put such a discussion on the record during the prosecution of that patent cannot be ignored. The prosecution history is an important part of any patent (See Markman v. Westview Instruments, 517 U.S. 570, 1996), used in matters of claim interpretation, and determining the patentee's (or patent applicant's) intention of language used in the specification and claims.

Because the file history of the '286 reference includes statements from the patentee's attorney that the scope of the '286 reference was intended to be limited to structural products, because such a limitation would be read into the patent by a federal district court construing its' claims during litigation, it follows that such limitations should be given to the patent

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when used as a reference. In the "Election and Traverse of Restriction Requirements" filed 13 October 1988, the patentee's attorney states, at two locations within the document, that "The invention relates to waterproofing a composite board or panel" (p. 2, second to last paragraph, first line), and "Here, the invention is a process for making a new and novel composite panel which, in turn, has superior characteristics." (p. 3, paragraph under the heading of "Necessity Test", second and third lines). A copy of the "Election and Traverse of Restriction Requirements" filed 13 October 1988, is attached hereto in the Evidence Appendix, and is part of the record, having been attached to the amendment filed May 2006.

Thus construing this limitation by the '286 patentee's attorney in view of the '286 reference, one of ordinary skill in the art would conclude that the reference did intend to teach use of such coatings for oriented strand board and composite panels.

In view of such an explicit admission of how the inventor viewed the scope of the patent, as stated by the patentee's attorney during the prosecution of the '286 reference, it is clear that the '286 reference did not intend to cover the fibrous cellulosic articles claimed by the Applicants in the present application.

Thus, when viewed as a whole, Applicants respectfully submit that the '286 reference suggests to one skilled in the art to use the materials of the reference for structural products; there is no motivation for using the teachings of the '286 reference for coating paper products and related materials as claimed in the present application.

The general nature of the products being used in the '286 reference are wood products, and are used in their native state without extensive processing. Products such as the paper, boxboard and other fibrous cellulosic products that Applicants utilize in the present invention are derived from wood by extensive chemical processing of the wood, such that the products no longer resemble the original wood from which they are derived.

In the R. 132 Declaration submitted with the amendment filed 18 May 2006, and attached hereto in the Evidence Appendix, one of the Inventors, Mr. Borsinger, in ¶¶15-18 described these differences between fibrous cellulosic products that are derived from wood, such as paper and cardboard, and distinguished these products from lumber or strand board, products made with wood. Although the '286 reference refers to fibrous products from agricultural materials (Abstract; col. 3, lines 8-9), col. 1, lines 4-8 refer to composite panels such as oriented strand board, and, as stated previously, the examples only deal with oriented strand board. This

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Declaration, in conjunction with the evidence of the patentee's attorney, and the contents of the '286 reference, Applicants submit do not teach the use of fibrous cellulosic products to be coated with a highly hydrogenated, vegetable derived wax, as claimed in the present pending application.

Therefore, Applicant respectfully submits that the rejection of Claims 30-39, 42 and 47 under 35 U.S.C. §103(a) were improper, these Claims define patentable subject matter, and that the Board respectfully must reverse the rejection of these claims.

D. Claim 41

At issue is whether the '286 reference means the composition is 100% triglyceride, thereby meeting claim 41 according to the examiner, because the reference indicates that dry particles of the triglyceride may be sprayed onto the substrate (col. 3:1-19). Applicant repeats herein the basic argument and legal authorities cited in previous Argument I Sections above.

But the reference states this spray application is performed prior to the material being laminated or pressed. The application of the dry particles is thus merely an intermediate step in the process, and because later steps of the process utilize additional materials, one skilled in the art can only speculate as to what the final concentration of the sprayed on material may be in the final product. Secondly, even if the material onto which the triglyceride is sprayed were to be treated in a warm alkaline aqueous solution, there is no evidence in the '286 reference that such an applied coating would be recyclable.

In both of the situations described in this section, the examiner is merely using hindsight speculation and the teachings of Applicant's Invention to impermissibly fill in gaps in the reference. Accordingly, the rejection of Claim 41 under 35 U.S.C. §103(a) is improper and must be reversed by the Board.

E. Claim 45: Iodine values, Properties, Inherency

Applicants reiterate the statements and case law previously cited regarding inherency, melting point and other parameters. It is the Applicants' teaching being used in hindsight to fill the gap of the reference, because the reference fails to recognize any such properties of their composition.

Claim 45 claims use of a wax with an iodine value in the range of 2-5, and includes

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additional properties such as the range of melting points of the wax, and the viscosities of the inventive waxes.

Example 3 of the '286 reference explicitly states that "In practice, the expense of hydrogenating oils to 0 IV makes it necessary to find trade-offs which must be factored in for the performance that is gained versus the expense to produce". (col. 4, lines 62-65). As a result of this trade-off, Sleeter thus uses materials that have a much higher iodine value, which he also notes effect a decline in performance as the iodine value increases. Such a statement, in conjunction with the lack of information about the other properties of the waxes, suggest that the '286 reference in fact teaches away from the present invention.

The Federal Circuit stated in In re Gurley (31 USPQ2d, 1131, 1132, F. Cir. 1994), that:

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. [citations omitted].

Therefore, the rejection of Claim 45 under 35 U.S.C. §103(a) is improper and must be reversed by the Board.

F. Claim 45: Recycling

At issue is whether Claim 45 requires recycling; the examiner states these claims only require that the composition applied be dispersible in warm alkaline aqueous solution. Applicant submits that one skilled in the art would realize, from reading both the claims and the specification, that a coating being dispersible in a warm alkaline aqueous solution means recycling. For example, see the specification at page 16, lines 15-23; p. 17, lines 7-10 and 16-18, and p. 19, line 17 through p. 20, line 17, where Applicants refer to recycling, repulping and the use of warm alkaline aqueous mixtures to remove a coating for recycling.

Applicants reiterate the statements and case law previously cited regarding inherency, melting point and other parameters. It is the Applicants' teaching being used in hindsight to fill the gap of the reference, because the reference fails to recognize any such

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properties of their composition. The '286 reference deals with rendering structural products water resistant; it does not recognize, nor even attempt to determine, whether the applied composition is dispersible under aqueous conditions. Therefore, the rejection of Claim 45 under 35 U.S.C. §103(a) is improper and must be reversed by the Board.

II. Whether Claims 30-38, 41-42, 45 and 47 are unpatentable under 35 U.S.C. §103(a) based on WO98/00815.

A. Claims 30-38, 41-42, 45: Inherency

Claims 30-38, 41-42, 45 and 47 were rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/00815 ("the '815 reference").

The '815 reference allegedly teaches applying a coating containing a triglyceride such as tristearin or a hardened vegetable oil to a paperboard, in order to make the coated paperboard more repulpable. Tristearin is stated to be a triglyceride with stearic acid; and additives such as beeswax, a type of paraffin (page 5), may also be present. The coating composition may be applied in the molten state (p 5), allegedly meeting the requirements of claim 41. The '815 reference discloses that the triglycerides may be removed from paperboard by several different means, including hot water (pp 6-7) or saponification under alkaline conditions (p. 7).

It is alleged that tristearin is a claimed triglyceride, and that although the '815 reference does not disclose the iodine value, MP or saponification value of the triglyceride, the tristearin of '815 would inherently have the same properties as that claimed.

The '815 reference does not disclose the iodine value, MP or saponification value, or viscosity of the triglyceride and these properties are alleged to be inherent, and the same as those values claimed.

B. Claims 30 and 45: Repulping

Also at issue is whether the '815 reference, taken as a whole, teaches repulping of the coated material. The Examiner argues that p. 8 of the reference lists repulping as a method of removing triglycerides from paperboard

Applicants reiterate the legal authorities cited in the previous sections of the

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Argument in response to the rejection of Claims 30 and its related group of claims and Claim 45. Applicants also reiterate the statements and case law previously cited regarding inherency, melting point and other parameters regarding the '286 reference.

5 The federal courts have held that in performing an obviousness analysis, one must also consider if the prior art provides the required expectation of success, as "both the suggestion and the expectation of success must be founded in the prior art, not in applicant's disclosure." See In re Dow Chemical Co. v. American Cyanamid Co., 5 USPQ, 1529, 1531 (F. Cir. 1988).

10 As stated previously, each claim limitation must be taught, either explicitly or implicitly by the teachings of the reference. Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. and Inter. 1985). "The examiner must make a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. and Inter. 1985).

15 The MPEP §2142 further states that "When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper, Ex parte Skinner, 2 U.S.P.Q.2d 1788 (Bd. Pat. App. and Inter. 1986).

20 It is the Applicants' teaching being used in hindsight to fill the gap of the '815 reference, because the reference fails to recognize any such properties of their composition. The '815 reference deals with tristearin; Applicants claim a triglyceride which has a stearic acid as a major component. Tables 1 and 2 of the specification (p. 14-15, respectively) summarize properties of the inventive waxes, and the fatty acid composition of these waxes ranges from C₈ through C₂₀. The soy wax includes a greater concentration range of C_{18:0} (stearic acid) than the palm wax, but this fatty acid is not the only fatty acid in the inventive waxes (see Tables 1 and 2 at p. 14-15 of the specification, or the summary at pp. 7-8 of this Brief). Therefore, these Claim rejections under 35 U.S.C. §103(a) are improper and must be withdrawn.

30 The '815 reference notes that repulping (optionally with flotation) is one of several potential methods for removal of triglycerides from paperboard (p.6-7), and the inventors did "Initial trials using boxboard coated with a coating comprising 97% hardened tallow and 3% polyethylene plasticizer" (p.15).

35 Tallow is known as a mixture of fats, generally obtained from beef and sheep (The

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Merck Index, 13th Edition, 2001, entry no.: 9131, p. 1613-1614, Evidence Appendix), it's composition includes the following glycerides:

oleic acid	37-43%
palmitic acid	24-32%
stearic acid	20-25%
myristic acid	3-6%
linoleic acid	2-3%, with minor amounts of cholesterol and other fatty acids.

But tallow, as described above, and in the '815 reference (combination of fats, generally from beef at p. 4, line 33- p. 5, line 1) is quite different from the vegetable-derived waxes of the present invention (see summary at pp. 7-8 of this Brief).

The '815 reference indicates these were initial studies, but teaching the use of a plasticizer in combination with a tallow would not lead one of ordinary skill in the art to employ a vegetable-derived wax without any plasticizer, as Applicants have done in the presently claimed invention. One of ordinary skill in the art, following the teachings of the '815 reference as a whole, would pursue the development of wax coatings that include a plasticizer, rather than the highly hydrogenated waxes derived from vegetable oils employed by the Applicants, to solve the problem of preparing a water resistant coating that is recyclable.

Accordingly, the rejection of Claims 30-38, 41-42, 46 and 47 is improper under 35 U.S.C. §103(a), and the Board must therefore reverse these rejections, and find that these claims define patentable subject matter.

III. Whether Claims 30-33, 41 and 47 are unpatentable under 35 U.S.C. §103(a) based on RD 392017 ("the '017 reference").

A. Claims 30-31 and 47

These claims were rejected on the allegation that the '017 reference teaches a waterproofing coating for paper, and that the paper is easily recycled. The Examiner indicates that the reference did not teach a recycling method, but that it would have been obvious to one of ordinary skill in the art to have selected a conventional method such as a warm alkaline bath.

Applicant reiterates the legal reasoning of the previous sections of the Argument.

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The Board has stated "The examiner must make a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. and Inter. 1985). Applicants can only speculate on the reason for the rejection of these claims in view of the Board's opinion in Ex parte Clapp.

5

The example in the '017 reference mixes a palm stearine having an iodine value of 12.7 (sample I) with another having an iodine value of 38.2 (sample II), in different proportions, to give an array of different products having ratios of I:II ranging from 90:10 to 10:90, but the iodine values of these different products are not specified in the reference. The Figure illustrates the fat content plotted as a function of temperature, what is referred to as the plasticity of the mixture.

10

As Applicants have discussed in reply to the previous Office Action, and which is reiterated herein, the '017 reference (p.772) explicitly states

15

It is not necessarily an advantage to work with fully or nearly fully hydrogenated mixtures of triglycerides, as they tend to have a sharp melting profile, i.e., they are more brittle and sometimes tend to crack on the paper.

20

Reading that, in conjunction with the '017 reference specifically stating avoiding the use of hydrogenated fats and oil, one of ordinary skill in the art would indeed, not want to use hydrogenated fats and oils to obtain a paper coating.

This is the true definition of "teaching away" as noted by the Federal Circuit when it said in In re Gurley (31 USPQ2d at 1131), that:

25

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. [citations omitted].

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Further, the Federal Circuit, in McGinley v. Franklin Sports Inc. (60 USPQ2d 1001, F. Cir. 2001) stated:

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We have noted elsewhere, as a "useful general rule," that references that teach

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away cannot serve to create a prima facie case of obviousness. In re Gurley, 31 USPQ2d 1131, 1132 (Fed. Cir. 1994).

5 The '017 reference merely mentions the desirability of incorporating an emulsifier
into the coating wax to make the used coated paper more recyclable. But the reference only
teaches that the mixtures of palm stearines had a plasticity comparable to that of an unnamed and
unspecified commercial product. There is no demonstration that the mixtures are actually being
used, or could be used, as paper coatings, let alone any demonstration that papers coated with any
10 of the mixtures could be recycled. Note that even the key words listed for the reference fail to list
recycling

B. Claims 33 and 41

15 Specifically regarding Claims 33 and 41, there simply is no indication of either the
viscosity or the composition of the triglyceride in the reference.

Applicants repeat the case law and legal authorities recited in the previous sections
of the Argument.

20 Under the legal authority requiring the examiner to make a convincing argument why
the reference teaches the subject matter of the claimed invention, as a whole, the examiner has
failed to meet this legal burden. Given the analysis Applicant has gone through in the previous
Sub-Argument III A, there is sufficient proof that the rejection of these claims was speculative,
leaving one to guess at the underlying rationale for the rejection of the claims. The rejection was
merely too speculative. Accordingly, the Board must find that the rejection of Claims 33 and 41
25 were improper, reverse the rejection of these claims, find that they determine patentable subject
matter, and thus allow these claims.

C. Claim 33

30 Applicant reiterates the legal reasoning of the previous sections of the Argument,
in particular those recited in the previous two Sub-Arguments (III A, and III B, above). Claim 33
refers to the viscosity of the inventive triglyceride. The '017 reference uses a mixture of
triglycerides, but aside from the individual iodine values of the components before they are mixed
together, and the ratio of the two components in the mixture, to conclude that even one of these
35 mixtures has a viscosity within the range specified in claim 33 is purely guesswork. The '017

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reference fails to describe viscosity of any of either one of the individual components used to make the mixtures, nor does it discuss the viscosity of the mixtures actually tested. The Board has stated "The examiner must make a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. and Inter. 1985). There is no convincing reason for the rejection of this claim based on the '017 reference, and accordingly, the Board must reverse the rejection of Claim 33.

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8. CONCLUSION

Applicant respectfully submits that Claims 30-39, 41, 42, 45, and 47 define patentable subject matter, and for the reasons presented above, the Board must reverse the rejections of these Claims, determine that these Claims define patentable subject matter, and allow the present pending Claims.

Respectfully submitted,



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Dated: July ³¹/₁, 2007

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9. CLAIMS APPENDIX

Claims involved in this appeal are:

1 through 29, inclusive (Cancelled)

5

30. A composition for application to a fibrous cellulosic material, the composition comprising a vegetable-derived triglyceride having a melting point greater than 120 degrees F, and being characterized by an iodine value between 0 and 30, the triglyceride comprising an oil selected from the group consisting of soybean, corn, cottonseed, rape, canola, sunflower, palm, palm kernel, coconut, crambe, linseed and peanut, the composition applied in a quantity sufficient to render the cellulosic material resistant to water, the applied composition being dispersible in a warm alkaline aqueous solution.

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31. The composition as described in claim 30, wherein the melting point is from about 130 degrees F to about 165 degrees F.

32. The composition as described in claim 31, wherein the melting point is from about 136 degrees F to about 160 degrees F.

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33. The composition as described in claim 31, wherein the composition is further characterized by having a viscosity of from about 10 to about 200 cps at a temperature of 140 degrees F.

34. The composition as described in claim 33, wherein the triglyceride is characterized by an iodine value between 0 and 10.

25

35. The composition as described in claim 34, wherein the triglyceride is characterized by an iodine

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value from about 2 to about 5.

36. The composition as described in claim 34, wherein the triglyceride comprises a fatty acid, the fatty acid having from about 8 to about 22 carbon atoms.

5 37. The composition as described in claim 36, wherein the fatty acid is stearic acid.

38. The composition as described in claim 33, further comprising one or more compounds chosen from the group consisting of paraffins, microcrystalline waxes, stearic acid, and oleic acid, and wherein the triglyceride comprises from about 50% to about 99% of the composition.

10 39. The composition as described in claim 38, further comprising one or more compounds chosen from the group consisting of dispersants and surfactants.

40. (Cancelled)

15 41. The composition as described in claim 30, wherein the triglyceride comprises from about 80 to about 100% by weight of the composition.

20 42. The composition as described in claim 31, wherein the triglyceride is characterized by having a saponification value of from about 150 mg/g KOH to about 200 mg/g KOH.

43-44. (Cancelled)

25 45. A composition for application to a fibrous cellulosic material, the composition comprising a vegetable-derived triglyceride having a melting point between 136-160 degrees F, the triglyceride being characterized by having an iodine value of between 2 and 5, the composition being

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characterized by a viscosity of from about 10 to about 200 cps at 140 degrees F, wherein the triglyceride comprises a fatty acid, the fatty acid being stearic acid, and wherein the triglyceride comprises an oil selected from the group consisting of palm and soybean oil, the composition applied in a quantity to render the cellulosic material resistant to water, the applied composition being dispersible in a warm alkaline aqueous solution.

5

46. (Cancelled).

47. The composition as described in claim 30, wherein the fibrous cellulosic material is chosen from the group consisting of paper, kraft paper, corrugated paper, linerboard and paperboard.

10. EVIDENCE APPENDIX (Evidence follows Table of Authorities)

- A. Declaration of Mr. Gregory Borsinger under 37 CFR 1.132.
- B. Database WPI-XP-002239726 12-10-1996, Aarhus Oliefabrik, (RD 392017 A).
- C. Election and Traverse of Restriction Requirements filed 13 October 1988
- D. The Merck Index, 13th Edition, 2001 entry no.: 9131, p. 1613-1614

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11. RELATED PROCEEDINGS APPENDIX

(NONE)

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12. TABLE OF AUTHORITIES

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10 MANUALS

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15	<u>ACS Hospital Systems Inc. v. Montefiore Hospital</u> , 221 USPQ 929, 933 (F. Cir. 1984)	11
	<u>Ex parte Clapp</u> , 227 USPQ 973, 974 (Bd. Pat. App. And Inter., 1985), 12, 19, 21, 23	
	<u>Ex parte Skinner</u> , 2 USPQ2d 1788 Bd. Pat. App. And Inter., 1986)	19
20	<u>In re Dow Chemical Co. v. American Cyanamid Co.</u> , 5 USPQ2d 1529, 1531 (F. Cir. 1988)	19
	<u>In re Fine</u> , 5 USPQ2d 1596 (F. Cir. 1988)	11
	<u>In re Gurley</u> , 31 USPQ2d 1131 (F. Cir. 1994)	17, 21
	<u>In re Kotzab</u> , 55 USPQ2d 1313, 1317 (F. Cir. 2000)	12
	<u>In re Rickaert</u> , 29 USPQ2d 1955, 1957 (F. Cir. 1993)	13
25	<u>In re Shetty</u> , 195 USPQ 753, 756-757 (CCPA. 1957)	13
	<u>In re Spormann</u> , 150 USPQ 449, 452 (CCPA 1966)	13
	<u>In re Vaeck</u> , 20 USPQ2d 1438, 1442 (F. Cir. 1996)	11
	<u>Markman v. Westview Instruments</u> , 517 U.S. 570 (1996)	14
	<u>McGinley v. Franklin Sports, Inc.</u> , 80 USPQ2d 1001 (F. Cir. 2001)	21

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REFERENCE BOOKS

	The Merck Index, 13 th edition, 2001., pp. 1613-1614, entry no. 9131	20
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EXHIBIT A

Pat. Ser. No. 10/669,357

IN THE UNITED STATES PATENT AND
TRADEMARK OFFICE

Applicant: AZIZ HASSAN et al.
Serial No: 10/669,357
Filed: 25 September 2003

Atty. Docket No.:BSNSDIV
Examiner: ERMA C. CAMERON
Group Art Unit: 1762

For: REPULPABLE WAX

DECLARATION UNDER 37 CFR 1.132

- I, Gregory G. Borsinger, do hereby declare that:
1. I am one of the inventors of the above-referenced U.S. Patent Application.
 2. I make this Declaration in support of the above-referenced U.S. Patent Application.
 3. This Declaration is being submitted simultaneously with an Amendment in reply to Office Paper No./Mail Date 110905, mailed 14 November 2005.
 4. This Declaration is being submitted in response to the Examiner's rejection of Claims 30-39, 41-42 and 45 under 35 U.S.C. §103(a).
 5. I have been working in the chemical industry for over twenty-five (25) years.
 6. I have an undergraduate degree in Mechanical Engineering, am licensed in the states of New Jersey and New York as a Professional Engineer (P.E.), and hold a Master of Business Administration (M.B.A.) degree.

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7. I had been employed by Allied-Signal Corporation, where I served as a Manager for the corporation's Polyethylene Wax business.

8. During the period I was at Allied-Signal, the corporation was considered to be this country's largest producer of synthetic waxes.

9. I currently serve as a Consultant to Marcus Oil and Chemical Company ("Marcus") of Houston, Texas, a Division of HRD Corporation, the assignee of the pending patent application.

10. I have been a Consultant to Marcus for approximately six (6) years.

11. My services for Marcus include performing applications testing for various products.

12. Claims 30-39, 41-42 and 45 were rejected under 35 U.S.C. §103(a) as being unpatentable based on several references cited in the Office Paper mailed 14 November 2005.

13. U.S. Pat. No. 6,011,286 ("the '286 patent") to Sleeter addresses the use of oils in the preparation of oriented strand board ("OSB"), which is used as a structural building product.

14. Claims 30 and 45 of the pending patent application indicate the composition is used as a repulpable, waterproof coating for fibrous cellulosic products.

15. The '286 patent refers to the use of a triglyceride to enhance the water tolerance of composite boards, a structural building

product.

16. A fibrous cellulosic product is considered to be a product, derived from wood pulp through a process that involves chipping of the wood into small particles, followed by digesting the wood chips in an alkaline solution (the most common of which is referred to as the Kraft process). The purpose of the alkaline solution is to digest or dissolve the lignin, which is the main component of the inter-cellular material, rendered, such that the material loses its rigidity and takes on a fibrous configuration. The composite boards of the '286 patent include OSB, and other rigid materials such as wood, particle board, or plywood, which are not fibrous products because they are still structurally intact due to the presence of lignin.

17. The fibrous cellulosic products claimed in the present pending application and the composite boards described in the '286 patent contain cellulose. They are, however, different because the structural board form used in the '286 patent contains lignin to provide it with its' structure, and lignin is absent from the fibrous cellulosic products claimed in the present pending application.

18. Based on my experience in the industry, a person following the '286 reference would not employ its' teachings with fibrous cellulosic materials. Additionally the properties, such as the absorption characteristics, chemical composition and structural properties of articles made from wood particles such as described in the '286 reference differ from those made with the cellulosic fibers described and claimed in the present pending specification and claims.

19. Claims 30-39 and 41 were rejected under 35 U.S.C. §103(a) as being unpatentable based on RD 392017 ("the '017 reference"), in which a mixture of palm stearines was stated as teaching a waterproof coating for paper.

20. As stated in the specification (page 1, lines 28-30, and p. 2, lines 14-20 of the substitute specification filed 6 Dec. 2004, and Claims 38-39), other additives can be added to the claimed composition to give it more plasticity, but unlike those cited in the Mettler reference (EP 0 536 861 B1, cited in the '017 reference), the claimed invention does so without the use of animal fats (Claims 30 and 45, for example, referring to vegetable-derived products). The absence of such animal fats in Applicants' composition is advantageous, because it is generally known that members of several religious groups will not use products known to contain animal fats, or which may have been in contact with such fats.

21. The patent application WO 96/00815 ("the '815 reference") has been cited to reject Claims 30-38, 41-42 and 45 as unpatentable under 35 U.S.C. §103(a).

22. From my experience in the field, and from discussions with other industry personnel, although the '815 reference describes a paper coating, the invention described in this patent application is not used in the industry.

23. The problem with the product and process of the '815 reference is that there is excessive blocking, or sticking together of the materials, that are treated with this product. The melting point of the materials used in the '815 reference are not specified.

24. Blocking is considered to be an undesirable property of material used as a coating.

25. Blocking is known among those in the industry as being caused by either the product having too low of a melting point, or the presence of low molecular components in the product which contribute to the blocking.

26. The melting points of the waxes claimed in the present application are sufficiently high to prevent this blocking problem.

27. In a series of experiments following the procedures of ASTM D-1465, using either the "wax picking" or "wax blocking" temperature (there was no observable difference between the two versions, we found that the data, reported as the Wax Blocking Temperature, tracked closely with the melting point of the particular waxes tested.

28. The "wax picking" temperature is the temperature where the wax coated paper first begins to transfer to a second, uncoated paper substrate on a heat gradient bar.

29. The "wax blocking" temperature is the temperature where 50% of the wax film distorts and transfers to a second, uncoated paper substrate on a heat gradient bar.

30. The data, shown in Fig. 1 attached hereto, is compared with a series of paraffins having specific melting points. The Nat 155 wax is the claimed soy wax. The blocking temperature of the Nat 155 wax is about 147 degrees F; its' Mettler drop point (Table 1 on page 14 of the substitute specification filed 6 Dec. 2004) is about 155-160 degrees F.

31. The following soy waxes and their respective iodine values (IV) are:

Nat 116, IV about 65;

Nat 125, IV about 55;

Nat 147, IV about 15; and

Nat 155, IV about 2.

32. Thus, the melting points of the claimed waxes are significant properties that were not appreciated by those skilled in the art, and were not recognized or appreciated in the references cited.

33. CITGO Petroleum Corporation, Tulsa, OK, is a manufacturer of petroleum-based waxes, such as paraffin waxes.

34. CITGO produces several different lines of wax products, among which are a Cascade Wax called Satur-Kote, and PACEMAKER® Waxes, described in CITGO product literature attached hereto as Exhibits A and B, respectively.

35. CITGO's Cascade Wax (Exhibit A) is designed to be used in cascading and other saturating wax operations, ways that are similar to how the inventive waxes are to be used. The melt point of the Cascade Wax is higher than the blocking temperature of the wax, 132 degrees F compared to 111 degrees F., respectively.

36. The datasheet for the PACEMAKER® Waxes (Exhibit B) also shows that the melting temperature of the wax is higher than the blocking temperature of the wax, the melting temperatures being as low as 21 degrees below the melting temperature (PACEMAKER® 42) to over 40 degrees difference (PACEMAKER® 30).

37. The CITGO documents indicate that the melting point and the

blocking point of the wax are factors in determining the use of the wax, and that the present pending claims regarding the melting point of the wax are not a mere property of the composition.

38. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

This declaration was executed by me on 12 May, 2006 at Chatham, New Jersey.

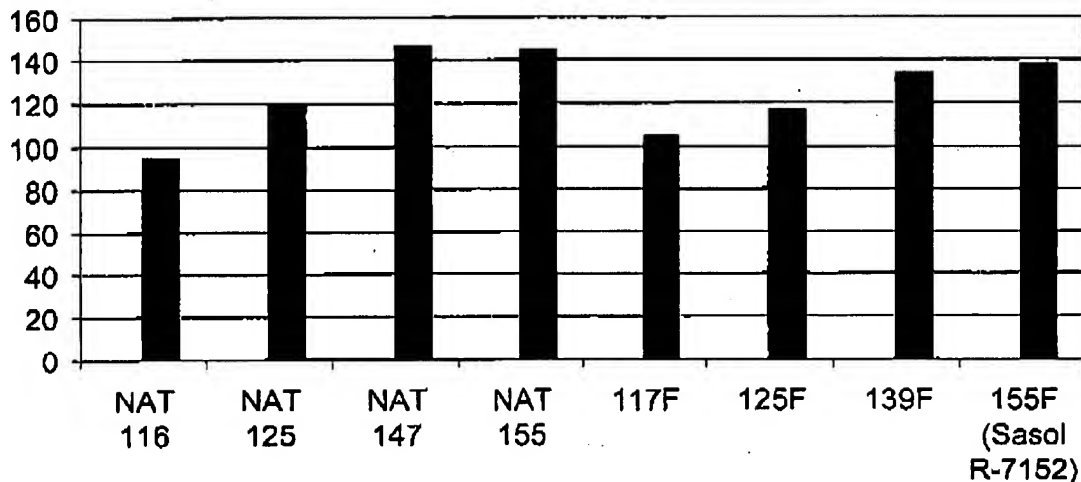

Gregory E. Borsinger

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Figure 1: Wax Blocking Temperature

Temperature (F)



Wax blocking temperatures according to ASTM D-1465

NAT 116, 125, 147 and 155 are hydrogenated soy waxes supplied by Marcus Oil & Chemical, Houston TX. The Nat waxes were hydrogenated to different iodine values. The lower the iodine value the higher the melt point. The melt point of these waxes are as indicated by the number following the NAT prefix (i.e. NAT 116 = melt point of 116F).

Waxes identified as 117F, 125F and 139F were petroleum based waxes sourced from CITGO Petroleum Corp. Tulsa, Oak with the melt points as indicated.

Sasol R-7152 is a synthetic Fischer-Tropsch wax produced by Sasol Wax Sasolburg, South Africa with a melt point of 155F.



Pacemaker Waxes

CITGO Pacemaker® Waxes are a complete line of fully refined paraffin waxes, recommended for applications demanding the ultimate in refinement and product uniformity. Some of the outstanding points of these waxes are:

- Filtered and percolated to be odor free, taste free and water white in color.
- Surpass current FDA requirements for food grade waxes, and are approved by the U.S. Department of Agriculture.
- Manufactured in different melt point grades offering a wide selection for any paraffin wax requirement.
- Available in 2,000 pound palletized carton, liquid bulk tank trucks or liquid bulk tank cars.

Typical Properties

Grade	Melt Point (°F)	Freezing Point (°F)	Flash Point (°F)	Fire Point (°F)	Smoke Point (°F)	Cloud Point (°F)	Crystallization Point (°F)	Hardness (Shore A)	Softening Point (°F)	Viscosity (cSt)	Specific Gravity (60/60)	API Gravity (60/60)	Refractive Index (20°C)	Acid Value (mg KOH/g)	Alkali Value (mg KOH/g)	Water (ppm)	Sulfur (ppm)	Asphaltenes (ppm)	Polymers (ppm)	Other (ppm)
1	110-115	105-110	110-115	115-120	120-125	125-130	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200
2	115-120	110-115	115-120	120-125	125-130	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205
3	120-125	115-120	120-125	125-130	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210
4	125-130	120-125	125-130	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215
5	130-135	125-130	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220
6	135-140	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225
7	140-145	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230
8	145-150	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235
9	150-155	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240
10	155-160	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245
11	160-165	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250
12	165-170	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255
13	170-175	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260
14	175-180	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265
15	180-185	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270
16	185-190	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275
17	190-195	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280
18	195-200	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285
19	200-205	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290
20	205-210	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295
21	210-215	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300
22	215-220	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305
23	220-225	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310
24	225-230	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315
25	230-235	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320
26	235-240	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325
27	240-245	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330
28	245-250	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335
29	250-255	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340
30	255-260	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345
31	260-265	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350
32	265-270	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355
33	270-275	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360
34	275-280	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365
35	280-285	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370
36	285-290	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375
37	290-295	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380
38	295-300	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385
39	300-305	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390
40	305-310	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395
41	310-315	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400
42	315-320	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405
43	320-325	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405	405-410
44	325-330	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405	405-410	410-415
45	330-335	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405	405-410	410-415	415-420
46	335-340	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405	405-410	410-415	415-420	420-425
47	340-345	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405	405-410	410-415	415-420	420-425	425-430



CITGO Satur-Kote 200

Cascade Wax

CITGO Satur-Kote is a blend of various waxes and an additive. The proper balance of these selected materials has been designed to take advantage of the superior qualities which each imparts toward enhancing water holdout, increased strength and board stiffness properties. This product was formulated primarily for Cascade and other saturating wax operations and may also be used for roll coating.



CITGO Satur-Kote 200 has the following characteristics:

- Excellent color and color stability combined with low odor.
- Meets all FDA and USDA requirements for food packaging.
- Produces a smooth satin finish, free of striation and "orange peel."
- High blocking temperature reduces potential blocking problems.
- Wet strength and/or compression of corrugated boxes are greatly improved.
- Suggested applications temperature for Cascading 190 - 200°F.

CITGO Satur-Kote is available in 2,000 pound palletized cartons. Liquid bulk deliveries are also available in tank trucks or tank cars.

Typical Properties

Color	Light Yellow
Odor	Low
Viscosity	100-150 cP
Flash Point	220°F
Fire Point	240°F
Freezing Point	-10°F
Cloud Point	-15°F

There are additional products, or CITGO can design blends for specific customer applications. Above product meets FDA requirements listed in CFR 21 175.105, 176.170 and 176.180.

For additional information, or to place an order, contact:

CITGO Petroleum Corporation
Lubes & Specialty Products
P.O. Box 3759
Tulsa, OK 74102

or phone toll free:

1-888-CITGOWX (248-4669)

FAX: 1-800-645-6869

E-mail: citgowax@citgo.com

01/01

EXHIBIT B

Pat. Ser. No. 10/669,357

DERWENT-ACC-NO: 1997-085283

DERWENT-WEEK: 199708

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TITLE: Paper coating for waterproof barrier for food packaging material - by using high melting non hydrogenated triglyceride fraction mixt. with vegetable or animal fat free of trans-fatty acid for safe digestion.

PATENT-ASSIGNEE: AARHUS OLIEFABRIK AS(AARH) , ERIKSEN J(ERIK)

PRIORITY-DATA: 1996RD-0392017 (November 20, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
RD 392017 A	December 10, 1996	N/A	600	D21H 000/00

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
RD 392017A	N/A	1996RD-0392017	November 20, 1996

INT-CL (IPC): D21H000/00

ABSTRACTED-PUB-NO: RD 392017A

BASIC-ABSTRACT:

The coating of paper to obtain a waterproof barrier comprises:

(i) using high melting non hydrogenated triglyceride fractions alone or as mixtures with vegetable or animal fats; where:

- (a) an emulsifier is incorporated into the coating wax. ;
- (b) the emulsifier being distilled monoglycerides or derivatives; and
- (c) the amount is 1-8 % in the coating material.

USE - Used as a food packaging material.

ADVANTAGE - Easy recyclability of used coated paper is obtd. to accomplish satisfactory products with sufficient plasticity similar to the paraffinic wax products totally free of trans-fatty acids which is more healthy.

Compared to paraffin waxes triglycerides can be digested and metabolised without risk when the coating is migrating into the food products.

EXAMPLE - A palm stearin having a iodine value 12.7 (I) was mixed with a palm stearin having the iodine value 38.2 (II) in different proportions giving an array of different products.

By way of comparisons a product from the market comprising partly hydrogenated and fractionated vegetable triglycerides was included.

It appeared that the plasticity was similar.

The mixing proportions of (I) and (II) in the interval of 90:10 to 10:90 all provided waxes applicable to coating paper.

The melting point of the product range was from 50-65 deg. C.

CHOSEN-DRAWING: Dwg.0/1

**TITLE-TERMS: PAPER COATING WATERPROOF BARRIER FOOD PACKAGE MATERIAL
HIGH MELT**

**NON HYDROGENATION TRI GLYCERIDE FRACTION MIXTURE VEGETABLE
ANIMAL**

FAT FREE TRANS FATTY ACID SAFE DIGEST

DERWENT-CLASS: F09 G02

CPI-CODES: F05-A06B; G02-A05C;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1997-027506

772 / Research Disclosure - December 1996

39217

Paper Coating.

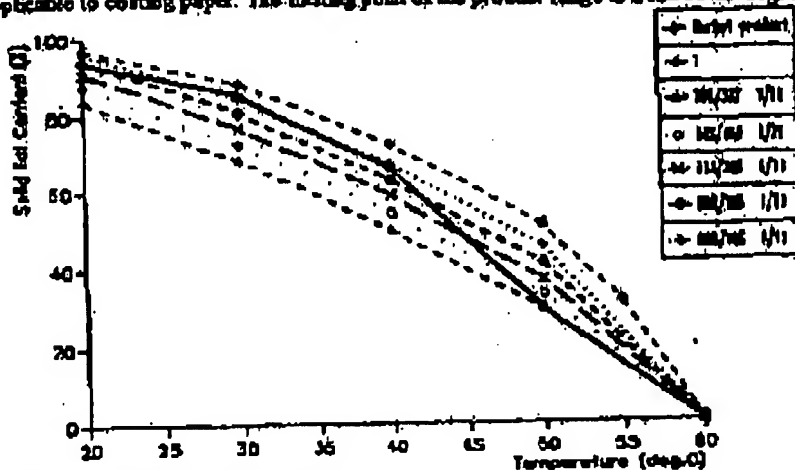
39218

O-ring 5.

According to literature, coating of paper to obtain a water proof barrier may be performed with paraffin waxes and hydrogenated castor oil. (1)
 It is also known that different vegetable waxes can be used. Recently a Corden company, Paper-Metier, obtained a patent on the use of hydrogenated triglycerides for this purpose. (2)
 This kind of coated paper is used as a food packaging material.
 For a long period we have been working with similar products, and during our work we have found that to accomplish satisfactory products with sufficient plasticity similar to the paraffinic wax products it is not necessarily an advantage to work with fully or nearly fully hydrogenated mixtures of triglycerides, as they tend to have a very sharp melting profile, i.e. they are more brittle and sometimes tend to crack on the paper.

Instead of using hydrogenated fats and oils as paper coating materials, we have used high melting non hydrogenated triglyceride fractions alone or as mixtures with vegetable or animal fats. Such products are usually free of trans-fatty acids which from a health point of view surely is an advantage. Compared to paraffin waxes triglycerides can be digested and metabolized without risk when the coating is migrating into the food products.
 In order to ease the recyclability of used coated paper it is an advantage to incorporate an emulsifier into the coating wax. This could be distilled monoacylglycerols or derivatives thereof. The amount should be from 1-8 % to the coating material.

The following examples illustrate different mixtures of triglycerides based on palmitic acid. A palmitic acid having a iodine value 12.7 (I) is mixed with a palmitic acid having the iodine value 38.2 (II) in different proportions giving an array of different products. By way of comparison a product from the market composed of partly hydrogenated and fractionated vegetable triglycerides is included. It appears that the plasticity is similar.
 The mixing proportions of (I) and (II) in the interval of 90:10 to 10:90 all provide waxes applicable to coating paper. The melting point of the product range is from 50-65 deg. C.



1. Kirk Othmer 1970 edition, Waxes
 2. EPD patent 0 336 861 (Papier Metier)
 Disclosed by Astrup Oefeleit A/S, Jørgen-Erikson
 39217

Disclo
39218

EXHIBIT C

Pat. Ser. No. 10/669,357



IN THE

UNITED STATES PATENT & TRADEMARK OFFICE

APPLICATION OF: Ronald T. Sletter

CASE: 330X1337

SERIAL NO: 08/919,761

FILED ON: August 28, 1997

FOR: Material for Enhancing Water
Tolerance of Composite Board

ART UNIT
1204RECEIVED
GROUP 1300

98 OCT 20 AM 10:41

ATTENTION OF:
L. Tentoni

EXAMINER

COMMISSIONER OF PATENTS & TRADEMARKS
WASHINGTON, D.C. 20231

Dear Sir:

[X] AUTHORIZATION TO PAY AND PETITION FOR THE ACCEPTANCE OF ANY NECESSARY FEES: If any charges or fees must be paid in connection with the following Communication (including but not limited to the payment of issue fees), they may be paid out of our deposit account No. 12-0064. If this payment also requires a Petition, please construe this authorization to pay as the necessary Petition which is required to accompany the payment.

ELECTION AND TRAVERSE OF RESTRICTION REQUIREMENTS

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on

Date October 13, 1998

Catherine De Nardo
Catherine De Nardo

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Jww/election/330-1337 (jww/gm)

Applicant elects Group I claims 1-28, 30-33, and 35.

The examiner requires restriction between the majority of the claims and claim 29 (which distinguishes from its parent claim by the words "conjugated linseed" oil) and Claim 34 (which is a product by process claim depending from claim 1).

Both of the claims 29 and 34 depend from claims which admittedly belong in the elected group. If the parent or base claim is found to be allowable, it can not be made less allowable by adding further limitations thereto. Hence, there is no justification for drawing a line between the top part (base claim) of a claim and the bottom part (dependent claim) of the same claim.

The term "vegetable oil" appears in claims 1, 4. The term "linseed oil" appears in claims 9, 18. The specific combination of "conjugated linseed oil" is identically expressed in claims 18 and 29. Hence, on the basis of "conjugated," "linseed oil" or "conjugated linseed oil" there is no line of demarcation between claim 29 and other claims.

The word "conjugated" appears in claims 14, 18, 22 and 23. "Conjugated," is related to a bonding agent which is described in U.S. Patent 5,507,633 that is mentioned on page 1 line 9 of the specification. The Examiner might also wish to look at Patent 5,719,301.

Hence, there is no line of demarcation between claims 14, 18, 22, 23 and 29.

The invention relates to waterproofing a composite board or panel. The invention may be used with many triglycerides (see claim 9). The conjugated linseed oil (sold under the trademark "Archer I") is preferred because it greatly enhances the bonding strength and other characteristics of the composite board.

Accordingly, there is no reason to single out any of the triglycerides (including linseed oil) for a restriction requirement.

The Examiner argues that the process can make other products and that this product can be made by other processes. The Examiner is invited to describe the process that he would use and to support his process by the affidavit prescribed by 37CFR1.107(b). Then, applicants will have the opportunity to contradict or explain the various suggestions that may be put forward.

Claim 34 is a product-by-process claim which is a style of claim going back at least as far as *Pickhardt v. Peckard* 22 F. Supp 530 (S.D.N.Y. 1884). This type of claim is used under the so called "Necessity Rule" when a product can not be adequately defined except by describing how it is made.

From the view point of Infringement, the process claim must be Infringed before the product claim is Infringed. Therefore, if the process claim is patentable, an addition of further limitation thereto does not make it less allowable.

NECESSITY TEST

Historically, a product-by-process claim is appropriate when there is no other adequate way of describing a product. Here, the invention is a process for making a new and novel composite panel which, in turn, has superior characteristics. If the Examiner knows of a way of claiming the end product panel in structural terms, he is invited to suggest it. Any reasonable suggestion will be adopted. Applicants believe that the only accurate claim is in terms of how the composite panel is made. Therefore, a product-by-process type of claim is appropriate.

Reference is made to "*Tropix Inc. v Luminogen Inc.*" 27 USPQ 1475 (DCDM 1993) which refers to "product-by-process" claims and says that the product-by-process claim covers the *process*. It goes on to say that the Federal Circuit should resolve the dispute, but that the judges of the Court of Appeals for the Federal Circuit are in "*open disagreement...making...a prediction hazardous*" (see the second paragraph in the

opinion). The *Tropix* judge pointed out that as far back as 1777, the U.S. Supreme Court said that a product described by a process is limited to the process and does not cover a substantially identical product made by a different process. The *Tropix* judge goes on to say that he finds no "authority for Judge Newman's distinction in the *Thorpe* case which treats a product-by-process differently when the product is no better than the prior art."

The *Tropix* judge relies upon *Atlantic Thermoplastics Co. Inc. v. Fayter Corp.*, 23 USPQ 1481 (CAFC 1992). This *Atlantic* case in turn relied on *Plummer v. Sargent*, 120 US 1442 (1887) which said that the claim is for a product made by the process and not a similar product made by another process (page 1487 left-hand-column). The *Atlantic* case (decided eight and a half years after the *Thorpe* case) says that a product-by-process claim is allowed since a patent is not to be denied because of limitations of the English language. (*In re Bridgeford*, 149 USPQ 55 (CCPA 1966))

Therefore, the later judicial opinion is that the product-by-process claim is appropriate in this case because there is no other obvious way of describing it in the English language. On the top of the right hand column (page 1485), the *Atlantic* judge quotes the Supreme Court:

"The invention, then, is a product or manufacture made in a defined manner. It is not a product alone separated from the process by which it is created....The process detailed is...as much...the invention as the materials of which the product is composed."

PETITION

If the Examiner elects to maintain the restriction requirement, please treat this paper as a petition and pass it on to proper authorities who review the matter of restrictions.

Respectfully submitted,

LAFF, WHITESEL, CONTE & SARET, LTD.

DATED: October 13, 1998

By:


J. Warren Whitesel

JWW/gm

EXHIBIT D

Pat. Ser. No. 10/669,357

9131. Tallow. In North America designates the fat from the fatty tissue of bovine cattle and sheep only. It may be offered separately as beef tallow and as sheep or mutton tallow.

Before using this section.

Page 1613

The term horse tallow is generally no longer admitted. *Oleo stock* is the highest grade of beef tallow. Contains (as glycerides): Oleic acid (37-43%), palmitic (24-32%), stearic (20-25%), myristic (3-6%), linoleic (2-3%). Minor constituents are cholesterol, arachidonic, elaidic, and vaccenic acids. Perhaps the most observed characteristic of tallow is its titer (solidif. pt) which ranges from 40° to 46°.

9132. Tallow Alcohol

THE MERCK INDEX

AN ENCYCLOPEDIA OF
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THIRTEENTH EDITION

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